

APPLICATION NO. 10/810525

February 22, 2005

YR

CLMPTO

1. A semiconductor structure comprising:

an insulator layer formed of a first polymer; and

an organic semiconductor layer formed of a second polymer,

wherein the first and second polymers self-assemble into a well-ordered co-polymer structure with the semiconductor layer positioned adjacent the insulator layer.
2. The semiconductor structure of claim 1, wherein the co-polymer is a block co-polymer.
3. The semiconductor structure of claim 1, wherein the organic semiconductor layer comprises carbon-based nanotubes.
4. The semiconductor structure of claim 1, wherein an interface between the insulator layer and the organic semiconductor layer is substantially free of contamination.
5. The semiconductor structure of claim 1, wherein the structure is a lamella structure with the insulator and semiconductor layered in parallel.
6. The semiconductor structure of claim 1, wherein the structure is a parallel cylindrical structure with parallel cylinders of the organic semiconductor surrounded in a matrix of the insulator.

7. The semiconductor structure of claim 1, wherein the structure is a vertically layered cylindrical structure with cylinders of the organic semiconductor surrounded in a matrix of the insulator.

8. The semiconductor structure of claim 1, wherein the structure is a lamella structure with the insulator and the semiconductor vertically layered in alternate lamellae of the insulator and the semiconductor.

9. An organic, thin-film semiconductor device comprising:

an insulator layer formed of a first polymer; and

an organic semiconductor layer formed of a second polymer,

wherein the co-polymers self-assemble into a well-ordered co-polymer structure with the semiconductor layer positioned adjacent the insulator layer.

10. The semiconductor device of claim 9, wherein the device is a transistor.

11. The semiconductor device of claim 10, wherein the transistor is a multi-gate transistor.

12. The semiconductor device of claim 9, wherein the device is a thyristor.

CLAIMS 13-20 (CANCELLED)